

## **AMENDMENTS TO THE CLAIMS**

This listing of claims will replace all prior versions, and listings, of claims in the application:

### **Listing of claims**

Claims 1-15 (Cancelled)

16. (Currently Amended) An isolated proton-gated cation channel comprising a subunit which comprises ~~having~~ the amino acid sequence of SEQ ID NO:2.
17. (Currently Amended) A channel according to claim 16, which forms is a homopolymeric channel.
18. (Currently Amended) A channel according to claim 16 ~~in combination with another cation channel sub-unit which together form a~~ which is a heteropolymeric channel.
19. (Currently Amended) A channel according to claim 18 ~~wherein the other cation channel comprising at least one subunit which~~ belongs to the degenerin/ENaC channel superfamily.
20. (Currently Amended) A channel according to claim 18, ~~wherein the other cation channel is a~~ comprising at least one subunit which belongs to the P2X ATP-gated channel family.
21. (Currently Amended) A channel according to claim 20, wherein ~~the other cation channel sub-unit is a~~ the P2X family sub-unit is P2X2.

Claims 22-37 (Cancelled)

38. (New) An isolated human proton-gated cation channel comprising a subunit that comprises an amino acid sequence that is at least 85% identical to the amino acid sequence of SEQ ID NO:2, wherein the proton-gated cation channel displays a biphasic current when activated by an extracellular proton concentration which is below physiological pH, and wherein the slow component of the biphasic current is amiloride-sensitive.

39. (New) An isolated human proton-gated cation channel comprising a subunit encoded by a nucleic acid that hybridizes at high stringency to a nucleic acid consisting of the nucleic acid sequence of SEQ ID NO:1, wherein the proton-gated cation channel displays a biphasic current when activated by an extracellular proton concentration which is below physiological pH, and wherein the slow component of the biphasic current is amiloride-sensitive.
40. (New) A channel according to claim 38 or 39, wherein the amino acid sequence of the subunit differs from the amino acid sequence of SEQ ID NO:2 by a substitution of one or several amino acid residues, and wherein the channel retains the functional properties of a channel comprising a subunit consisting of the amino acid sequence set forth in SEQ ID NO:2.